

## CURRICULUM VITAE

Name: Michele Di Mascio  
Born: December 8, 1969  
Birth place: Salerno, Italy  
Work address: National Institute of Allergy and Infectious Diseases, NIH, 6700 B Rockledge Drive, MSC 7609 Bethesda, MD 20892-7609  
Nationality: Italian  
Immigration Status: Permanent Resident  
Current Position: **Mathematical Statistician, Division of Clinical Research, National Institute of Allergy and Infectious Diseases, NIH, Bethesda, MD, USA.**  
Title: **Bioengineer, Biologist, PhD**

**Main Interests: Imaging HIV pathogenesis *in vivo* with Single Photon and Positron Emission Tomography. Mathematical Modeling of viral and cell dynamics. Drug distribution in anatomic compartments. Viral reservoirs and phylogenetic analysis.**

**Competitively funded awards:** Imaging Probe for the *In Vivo* Assessment of HIV-1 Dynamics (NIH 2003-2004). Principal Investigator: Dr. Michele Di Mascio

**Special Act Award:** February 2008, from National Institute of Allergy and Infectious Diseases- for the establishment of an imaging laboratory.

**Recent talks:** Noninvasive Imaging of AIDS *in vivo*. Second annual workshop on Experimental Imaging of Infectious Diseases. *Bethesda, USA*, September 17-18, 2007.

**Recent poster presentations:** at 15<sup>th</sup> Conference on Retroviruses and Opportunistic Infections, Boston, Feb 3-6, 2008. 1) Non-invasive *in vivo* Imaging of CD4 Cells in SHIV-infected Rhesus Monkeys; 2) Positron Emission Tomography Agent for Non-invasive Imaging of Antiretroviral Drug Penetration and Kinetics *in vivo*

**Lab coordinator** and authorized user for the SPECT imaging lab to study lentiviral pathogenesis in non-human primates; scientific supervision for a team of 3 fellows: M.S. (Mathematician), Bioengineer and Biologist.

2005 International Workshop on T cell turnover and homeostasis in HIV infection. National Institutes of Health, Bethesda, MD. Chairs: Michele Di Mascio and Zvi Grossman.

## EDUCATION

High School	Liceo Scientifico (five year School), G. Galilei, Pescara, Italy (1988). <u>Final grade: 60/60</u>
<b>B.S. +Master Degree (Electronic Engineering + Bioengineering).</b>	Electronic Engineering (five year degree, 29 exams), Course in Bioengineering. School of Engineering, University of Ancona, Italy. Supervisor: Prof. Tommaso Leo, full professor of Automatic Controls and Bioengineering of Physiological Systems. (1988-1994). Thesis: " Integration of Signals and Images for the Study of Human Movement Analysis". <u>Final grade: 110/110 cum laude (first-honor class)</u>
<b>B.S. + Master Degree (Biology + Biotechnology).</b>	Biological Sciences (five year degree, 28 exams + English exam), Course in Biotechnology. School of Mathematics, Physics and Life Science, University of Ancona. Supervisor: Prof. Paolo Migani, full professor of General Physiology. (1994-1999). Thesis: "Dynamical and functional properties of the electrical activity of mesencephalic neurons of rats" <u>Final grade: 110/110 cum laude (first-honor class)</u>
<b>PhD in Pharmacology</b>	3-Year Post-Graduated School in Pharmacology, ex- Agenzia per il Mezzogiorno, FORMEZ and the Ministry of the University, Science and Technology, at the Pharmacological Research Institute "Mario Negri Sud", (1996-1999). Supervisor: Dr. Ennio Esposito, MD, chief of Laboratory of Neurophysiology. Project: "Serotonin-Dopamine interaction in the Central Nervous System of rat: pharmacological and dynamical properties"
<b>Post Doctoral Research Associate.</b>	HIV-T cell-dynamics T-10, (Supervisor: Dr. Alan Perelson) Theoretical Division, Los Alamos National Laboratory, New Mexico, USA- 1999-2003
<b>Appointment</b>	Mathematical Statistician, Biostatistics Research Branch (Supervisor: Dr. Dean Follmann), Division of Clinical Research, National Institute of Allergy and Infectious Diseases, NIH, Bethesda, MD, USA.- 2003-to date

## PUBLICATIONS

1. **Di Mascio, M.** & Esposito, E. The degree of inhibition of dopaminergic neurons in the ventral tegmental area induced by selective serotonin reuptake inhibitors is a function of the density-power-spectrum of the interspike interval. *Neuroscience* **79**, 957-61. (1997).
2. Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. Selective blockade of serotonin2C/2B receptors enhances dopamine release in the rat nucleus accumbens. *Neuropharmacology* **37**, 265-72 (1998).
3. **Di Mascio, M.**, Di Giovanni, G., Di Matteo, V., Prisco, S. & Esposito, E. Selective serotonin reuptake inhibitors reduce the spontaneous activity of dopaminergic neurons in the ventral tegmental area. *Brain Res Bull* **46**, 547-54. (1998).
4. Di Giovanni, G., **Di Mascio, M.**, Di Matteo, V. & Esposito, E. Effects of acute and repeated administration of amisulpride, a dopamine D2/D3 receptor antagonist, on the electrical activity of midbrain dopaminergic neurons. *J Pharmacol Exp Ther* **287**, 51-7. (1998).

5. Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. Role of the serotonergic system in the control of mesocorticolimbic dopaminergic function. *Current Topic in Pharmacology* **4**, 107-116 (1999).
6. Di Giovanni, G., De Duerwaerdere, P., **Di Mascio, M.**, Di Matteo, V., Esposito, E. & Spampinato, U. Selective blockade of serotonin-2C/2B receptors enhances mesolimbic and mesostriatal dopaminergic function: a combined in vivo electrophysiological and microdialysis study. *Neuroscience* **91**, 587-97 (1999).
7. Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. SB 242084, a selective serotonin-2C receptor antagonist, increases dopaminergic transmission in the mesolimbic system. *Neuropharmacology* **38**, 1195-205. (1999).
8. **Di Mascio, M.**, Di Giovanni, G., Di Matteo, V. & Esposito, E. Decreased chaos of midbrain dopaminergic neurons after serotonin denervation. *Neuroscience* **92**, 237-43 (1999).
9. **Di Mascio, M.**, Di Giovanni, G., Di Matteo, V. & Esposito, E. Reduced chaos of interspike interval of midbrain dopaminergic neurons in aged rats. *Neuroscience* **89**, 1003-8 (1999).
10. Di Giovanni, G., Di Matteo, V., **Di Mascio, M.** & Esposito, E. Preferential modulation of mesolimbic vs. nigrostriatal dopaminergic function by serotonin(2C/2B) receptor agonists: a combined in vivo electrophysiological and microdialysis study. *Synapse* **35**, 53-61. (2000).
11. Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. Effect of acute administration of hypericum perforatum-CO<sub>2</sub> extract on dopamine and serotonin release in the rat central nervous system. *Pharmacopsychiatry* **33**, 14-8. (2000).
12. Di Matteo, V., **Di Mascio, M.**, Di Giovanni, G. & Esposito, E. Acute administration of amitriptyline and mianserin increases dopamine release in the rat nucleus accumbens: possible involvement of serotonin-2C receptors. *Psychopharmacology (Berl)* **150**, 45-51. (2000).
13. Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. Biochemical and electrophysiological evidence that RO 60-0175 inhibits mesolimbic dopaminergic function through serotonin(2C) receptors. *Brain Res* **865**, 85-90. (2000).
14. Metzner, K.J., Jin, X., Lee, F.V., Gettie, A., Bauer, D.E., **Di Mascio, M.**, Perelson, A.S., Marx, P.A., Ho, D.D., Kostrikis, L.G. & Connor, R.I. Effects of in vivo CD8(+) T cell depletion on virus replication in rhesus macaques immunized with a live, attenuated simian immunodeficiency virus vaccine. *J Exp Med* **191**, 1921-31. (2000).
15. Percus, J.K., Percus, O.E., Markowitz, M., Ho, D.D., **Di Mascio, M.** & Perelson, A.S. The distribution of viral blips observed in HIV-1 infected patients treated with combination antiretroviral therapy. *Bull Math Biol* **65**, 263-77. (2003).
16. Louie, M., Hogan, C., **Di Mascio, M.**, Hurley, A., Simon, V., Rooney, J., Ruiz, N., Brun, S., Sun, E., Perelson, A.S., Ho, D.D. & Markowitz, M. Determining the relative efficacy of highly active antiretroviral therapy. *J Infect Dis* **187**, 896-900. (2003).
17. **Di Mascio, M.**, Dornadula, G., Zhang, H., Sullivan, J., Xu, Y., Kulkosky, J., Pomerantz, R.J. & Perelson, A.S. In a subset of subjects on highly active antiretroviral therapy, human immunodeficiency virus type 1 RNA in plasma

- decays from 50 to <5 copies per milliliter, with a half-life of 6 months. *J Virol* **77**, 2271-5. (2003).
18. Markowitz, M., Louie, M., Hurley, A., Sun, E., **Di Mascio, M.**, Perelson, A.S. & Ho, D.D. A novel antiviral intervention results in more accurate assessment of human immunodeficiency virus type 1 replication dynamics and T-cell decay in vivo. *J Virol* **77**, 5037-8. (2003).
  19. Louie, M., Hogan, C., Hurley, A., Simon, V., Chung, C., Padte, N., Lamy, P., Baglatas, A., Flaherty, J., Coakley, D., **Di Mascio, M.**, Perelson, A.S. & Markowitz, M. Determining the antiviral activity of tenofovir DF in treatment-naïve chronically HIV-1-infected individuals. *AIDS* **17**: 1151-6 (2003).
  20. Simon, V., Padte, N., Murray, D., Vanderhoeven, J., Wrin, T., Parkin, N., **Di Mascio, M.** & Markowitz, M. Infectivity and replication capacity of drug resistant HIV-1 variants isolated during primary infection. *J Virol* **77**: 7736-45 (2003).
  21. **Di Mascio, M.**, Markowitz, M., Louie, M., Hurley, A., Ho, D.D. & Perelson, A.S. Viral Blip Dynamics during HAART. *J Virol* **77**: 12165-72 (2003).
  22. **Di Mascio, M.**, Ribeiro, R., Markowitz, M., Ho, D. & Perelson, A.S. Modeling the long-term control of viremia in HIV-1 infected patients treated with antiretroviral therapy. *Math. Biosci.* **188**:47-62 (2003).
  23. **Di Mascio, M.**, Markowitz, M., Louie, M., Hurley, A., Hogan, C., Simon, V., Follmann, D., Ho, D.D. & Perelson, A.S. Dynamics of Intermittent Viremia During HAART in Patients who Initiate Therapy During Chronic versus Acute and Early HIV-1 Infection. *J Virol* **78**:10566-73 (2004)
  24. **Di Mascio, M.**, Percus, J.K., Percus, O.E., Markowitz, M., Ho, D.D., & Perelson, A.S. The duration of an intermittent episode of viremia. *Bull. Math. Biol.* **67**:885-900 (2005).
  25. Kovacs, J.A., Lempicki, R.A., Sidorov, I., Adelsberger J., Sereti, I., Sachau, W., Kelly, G., Metcalf, J., Davey, R., Falloon, J., Polis, M., Tavel, J., Stevens, R., Lambert, L., Hosack, D., Issaq, H., Fox, S., Leitman, S., Baseler, M., Masur, H., **Di Mascio, M.**, Dimitrov, D., & Lane, C.H. Induction of Prolonged Survival of CD4+ T Lymphocytes by Intermittent IL-2 Therapy in Patients with HIV Infection. *J. Clin. Invest.* **115**: 2139-2148 (2005)
  26. **Di Mascio M.**, Sereti I., Matthews L., Natarajan V., Yoder C., Jones E., Chow C., Sidorov I., Dimitrov D., Metcalf J.A., Polis M.A. & Kovacs J.A. Differential dynamics of TCR excision circles and naïve T cells during immune reconstitution suggest that HIV depletes naïve T cells by activation to memory cells. *J. Virol.* **80**: 2665-2674 (2006).
  - .27 Chen, Y., **Di Mascio, M.**, Perelson, A.S., Gettie, A., Ho, D. & Zhang, L. Determination of virus burst size in vivo using a single-cycle SIV in rhesus macaques. *Proc Natl Acad Sci.* **104**:19079-84 (2007)
  - 28 Kaur, A., **Di Mascio, M.**, Ribeiro R.M., Perelson, A.S., McClure, H.M. & Johnson R.P. Dynamics of T- and B-lymphocyte turnover in a natural host of simian immunodeficiency virus. *J Virol.* **82**:1084-93. (2008)
  29. Kiesewetter, D., Srinivasula, S., Knudson, K., Lim, E. & **Di Mascio M.** *R* and *S* [<sup>18</sup>F]FPMPA: Nucleotide Reverse Transcriptase Inhibitor for Biodistribution Studies. *J Labelled Compounds* **51**: 207-212 (2008)
  - 30 Read, S., Lempicki, R., **Di Mascio, M.**, Srinivasula, S., Cheng, Huang, C.Y., Kovacs, J. et al. Rate of CD4 T cell turnover following IL-2 therapy is predictive of change in CD4 T cell count. *J. Inf. Dis.* **In press** (2008).

- 31 Catalfamo M., **Di Mascio, M.**, Hu, Z., Srinivasula, S., Thaker, V., Adelsberger, J., Adam Rupert<sup>3</sup>, Baseler, M., Roby, G., Follmann, D., and Lane, C. HIV infection leads to increased immune activation by two distinct pathways that differentially affect CD4 and CD8 T cell. *submitted*
- 32 **Di Mascio, M.**, S. Srinivasula, M. Collins, E. Lim, L.I. Cheng and D. Kiesewetter. Positron Emission Tomography agent for Non-Invasive Imaging of Antiretroviral Drug Penetration and Kinetics In Vivo. *in preparation*
- 33 **Di Mascio, M.**, Paik, C., Carrasquillo, J., Maeng, J-S., Srinivasula, S., Russ Byrum, R., Catalfamo, M., Nishimura, Y., Reimann, K., Martin, M., and Cliff Lane. Non-Invasive In Vivo Imaging of CD4 Cells in SHIV Infected Rhesus Monkeys. *submitted*
- 34 Percus J.K., Percus, O.E. and **Di Mascio, M.** The amplitudes of viral blips in HIV-1 infected patients treated with antiretroviral therapy are power-law distributed. *in preparation.*

## CHAPTER OF BOOK

**M. Di Mascio**, G. Di Giovanni and E. Esposito. Fourier analysis applied to the study of the electrical activity of midbrain dopaminergic neurons. In: International School of Biophysics: Neural circuit and Network (Eds. Torre, V. and Nicholls, J.), serie F: Computer and Systems, Vol. 167, pp. 41-51.